Air Quality Permitting
Statement of Basis

August 26, 2005

Permit to Construct No. P-040310

Bear River Zeolite Co., Preston

Facility ID No. 041-00010

Prepared by:

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AIR QUALITY DIVISION

FINAL

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Acronyms, Units, and Chemical Nomenclatures

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
Btu	British thermal unit
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
Rules	Rules for the Control of Air Pollution in Idaho
SIP	State Implementation Plan
SO_2	sulfur dioxide
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct (PTC).

2. FACILITY DESCRIPTION

Bear River Zeolite Co. (BRZ) is a mining facility located near Preston. The facility mines zeolite ore and transfers it to crushing equipment where the zeolite is crushed, screened, and dried.

3. FACILITY / AREA CLASSIFICATION

BRZ is defined as a minor facility for prevention of significant deterioration purposes because the potential particulate matter (PM) emissions do not exceed 250 tons per year (T/yr). Additionally, the facility is synthetic minor for Title V purposes because the emissions of pollutants regulated by the Title V program are limited to less than one hundred tons per year. The AIRS classification is "SM" because the potential emissions of any regulated air pollutant are limited to less than the applicable major source thresholds.

The facility is located within AQCR 61 and UTM zone 12. The facility is located in Franklin County which is designated as unclassifiable for all criteria pollutants (PM_{10}, CO, NO_x, SO_2, lead, and ozone).

The AIRS information provided in Appendix B defines the classification for each regulated air pollutant at BRZ.

4. APPLICATION SCOPE

BRZ submitted a PTC application on May 17, 2004 for the zeolite mine and crushing equipment.

4.1 Application Chronology

May 17, 2004	DEQ received BRZ's PTC application
June 21, 2004	DEQ determined the application complete

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

The following table contains the general specifications for the equipment at the BRZ facility.

Table 5.1 EQUIPMENT LISTING

Source Description	Emissions Control
Crushers, Mills, and Screens **Primary Crusher** Portec, Inc. Pioneer Division Jaw Crusher Capacity: 300 T/hr **Primary Crushing Building** Nordberg Mfg. Co. Cone Crusher Capacity: 100 T/hr Kohler Screen Capacity: 300 T/hr Size: 5 ft by 12 ft **Secondary Crushing Building** Jeffries Hammer Mill Capacity: 50 T/hr 2 Midwest Screens Capacity: 25 T/hr Size: 5 ft by 7 ft **Coarse Products Building** Philadelphia Hammer Mill Capacity: 10 T/hr Midwest Screen Size: 4 ft by 8 ft 2 Sweeco Screens Capacity: 10 T/hr Size: 4 ft diameter **Fine Products Building** Allis Chalmers Tube Mill Capacity: 10 T/hr 2 Derrick Screens Capacity: 10 T/hr Size: 3.5 ft by 10.5 ft	None Contained in a building. Building emissions are vented through the primary crushing building baghouse. Contained in a building. Hammer mill emissions are vented through the secondary crushing building baghouse. Contained in a building. Hammer mill emissions are vented through the coarse products building baghouse. Contained in a building. Building emissions are vented through the fine products building baghouse.
Generators GMC 8V92T/Lima Rated Output: 250 kW Fuel Type: Diesel Caterpillar 1693T Rated Output: 150 kW Fuel Type: Diesel Caterpillar 3304 Rated Output: 113 kW Fuel Type: Diesel	None
Kerr McGee Drum Dryer Rated Heat Input: 1,000,000 Btu/hr Fuel Type: Propane	Mikro Pulsaire Baghouse
Mining Operations	Fugitive Dust Control Plan

5.2 Emissions Inventory

The applicant estimated crushing equipment emissions using AP-42 emissions factors for crushed stone processing. For sources in buildings the applicant assumed a 70 percent particulate matter control efficiency for the building. For sources whose emissions are vented to baghouses the applicant used a control efficiency of 99.4% for PM_{10}. This is the weighted average of the emissions factors for particulate matter emissions from 0-2.5, 2.5-6, and 6-10 micrometers based on the percent by mass of each size speciation listed in AP-42 Table B.2-3. The generator emissions are based on AP-42 emissions factors for small internal combustion engines. The factors were taken from Table 3.3-1 for criteria pollutants and Table 3.3-2 for toxic air pollutants (TAPs). Emissions from the propane fired dryer were estimated using AP-42 emission factors for combustion sources plus an estimate for the particulate matter emissions from the baghouse. The cyclone listed in the emissions calculations was replaced with a baghouse. The applicant did not provide an updated emissions estimate. However, the baghouse is more efficient than the cyclone. Therefore, the emissions rate for the cyclone is a conservative estimate. Fugitive emissions from mining sources were estimated by the applicant using AP-42 emissions factors for drilling, blasting, truck loading, and vehicle traffic. The following tables summarize the emissions from BRZ.

Table 5.2 CRITERIA POLLUTANT EMISSIONS ESTIMATE

Source	Pollutants							
Source Description	PM_{10}		NO_2		SO_X		CO	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
250 kW Generator	7.27E-01	3.19	10.35	45.33	0.68	2.98	2.23	9.77
150 kW Generator	4.36E-01	1.91	6.21	27.20	0.41	1.79	1.34	5.86
113 kW Generator	3.29E-01	1.44	4.68	20.49	0.31	1.35	1.01	4.41
Primary Crushing Building Baghouse[a]	2.64	11.58						
Zeolite Dryer Baghouse	8.12E-01	3.56	0.15	6.7E-01	2.19E-04	9.59E-04	2.08E-02	9.11E-02
Secondary Crushing Building Baghouse	1.06	8.11						
Coarse Products Building Baghouse	1.85	4.63						
Fine Products Building Baghouse[a]	<5.01E-01	<2.20						
Total Point Source Emissions	7.9	34.4	21.4	93.7	1.4	6.1	4.6	20.1

[a] The primary crushing building and fine products building baghouses were added after the emissions inventory was prepared. The actual emissions will be less than those presented in this table.

Table 5.3 FUGITIVE DUST EMISSIONS ESTIMATE

	PM_{10}	
	lb/hr	T/yr
Primary Jaw Crusher	8.00E-02	3.51E-01
Apron Feeder Feed	6.06E-01	2.65
Primary Jaw Feed	6.06E-01	2.65
Trans. To Primary Screen Feed Belt	6.06E-01	2.65
Trans. To 50/100 Ton Bin Feed Belt	2.02E-01	8.85E-01
50 Ton Bin Feed	2.02E-01	8.85E-01
Minus 1" 100 Ton Bin Feed	2.02E-01	8.85E-01
Trans. To 20 Ton Bin Feed Belt	2.02E-02	8.85E-01
20 Ton Bin Feed	2.02E-02	8.85E-01
Bucket Elevator	2.02E-02	8.85E-01
Minus 100 100 Ton Bin Feed	2.02E-02	8.85E-01
14X40 100 Ton Bin Feed	2.02E-02	8.85E-01
Minus 100 Bulk Loadout	2.02E-02	8.85E-01
14X40 Bulk Loadout	2.02E-02	8.85E-01
Fine Product Building	5.01E-01	2.20
Coarse Product Building	1.65E-01	0.72
Secondary Crushing/ Screening Building	2.92E-01	1.28
Drilling	7.6E-02	3.34E-01
Blasting	1.52	6.67
Rock Truck Loading	4.0E-02	1.77E-01
Vehicle Traffic	3.96	17.35
Total Fugitive Emissions	9.20	45.9

Table 5.4 TOXIC POLLUTANT EMISSION RATES

	Formaldehyde	Benzene	Acetaldehyde	POM
250 kW Generator	2.77E-03	2.19E-03	1.80E-03	8.05E-06
150 kW Generator	1.66E-03	1.31E-03	1.08E-03	4.83E-06
113 kW Generator	1.25E-03	9.90E-04	8.14E-04	3.64E-06
Baghouse #1 (dryer emissions)	7.35E-05	1.18E-08		1.76E-09

5.3 Modeling

The applicant modeled the facility-wide PM_{10}, NO_x, and SO_2 emissions. The resulting concentrations are summarized in the following table. A detailed modeling analysis is contained in Appendix A.

Table 5.5 CRITERIA POLLUTANT MODELING RESULTS

Pollutant	Averaging Period	Facility Ambient Concentration ($\mu g/m^3$)	Total Ambient Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
PM_{10}	24-hour	41.11	117.1	150	78
	Annual	12.18	38.18	50	76
NO_2	Annual	16.23	33.23	100	33
SO_2	3-hour	17.74	59.60	1300	4
	24-hour	6.95	32.95	365	9
	Annual	1.06	9.06	80	11

In addition to the criteria pollutants above the applicant modeled the toxic pollutants whose emissions exceeded the applicable screening emissions limits. The resulting concentrations are summarized in the following table. A detailed analysis is contained in Appendix A.

Table 5.6 TOXIC POLLUTANT MODELING RESULTS

Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)	TAP Increment ($\mu g/m^3$)	Percent of Increment
Carcinogens				
Acetaldehyde	Annual	2.80E-03	4.5E-01	0.6
Benzene	Annual	3.40E-03	1.2E-01	3
Formaldehyde	Annual	4.37E-03	7.7E-02	6
POM	Annual	0.0001	3.0E-04	33

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 ..... Permit to Construct Required

The construction of this facility requires a PTC because it increases emissions of regulated air pollutants.

40 CFR 60 Subpart OOO ..... Rules for Standards of Performance for Nonmetallic Mineral Processing Plants

This facility is subject to the performance standards for rock crushing facilities in accordance with 40 CFR 60.670. These standards include opacity requirements for each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, and storage bin at the facility. Additionally, there are grain loading requirements for any vent associated with a building which encloses any equipment affected by Subpart OOO. A description of the specific requirements can be found in the permit conditions section of this statement of basis.

Other Requirements..... Consent Order Dated April 12, 2004

The April 12, 2004 consent order for BRZ contained a requirement that the facility submit a PTC application to address the equipment at BRZ which was constructed without a PTC. This permit is based on that application.

The consent order required BRZ to submit a fugitive dust control plan. DEQ did not formally approve this plan. During permit review the fugitive dust plan was reviewed and DEQ determined that additional information should be included. This permit requires that BRZ submit a modified fugitive dust plan. Permit Condition 5.4 describes the information that must be included in the fugitive dust plan. BRZ has reviewed the fugitive dust plan requirements in the permit and accepted the conditions.

The consent order required that BRZ conduct performance tests on the rock crushing equipment in accordance with 40 CFR 60 Subpart OOO. BRZ submitted performance test reports to DEQ for review, however there is still equipment at the facility which requires performance testing. Permit Condition 5.4 requires that BRZ conduct performance tests on all sources affected by 40 CFR 60 OOO. BRZ is responsible for determining which equipment requires performance testing.

5.5 Fee Review

This facility is subject to the $1,000 application fee for PTCs in accordance with IDAPA 58.01.01.224. The facility paid the $1,000 application fee on October 21, 2002. Additionally, this facility is subject to a PTC processing fee of $7,500 for an increase in point source emissions of more than 100 T/yr in accordance with IDAPA 58.01.01.225. This fee was paid on April 18, 2005.

Table 5.7 PTC PROCESSING FEE TABLE

Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	93.7	0	93.7
SO_2	6.1	0	6.1
CO	20.1	0	20.1
PM/PM_{10}	79.7	0	79.7
VOC	7.4	0	7.4
Total:	207.0	0	**207.0**
Fee Due	**$ 7,500.00**		

6. PERMIT CONDITIONS

Crushing Operations

6.1 Permit Condition 2.3 establishes a limit on the opacity from crusher emissions which do not have a capture system to no more than 15% in accordance with 40 CFR 60.672(c).

6.2 Permit Condition 2.4 establishes a limit on the opacity from transfer points, mills, screens, bucket elevators, bagging operations, storage bins, enclosed trucks, and rail stations to no more than 10% in accordance with 40 CFR 60.672(b).

6.3 Permit Condition 2.5 establishes a limit on opacity from any stack, vent, or other functionally equivalent opening to no more than 20% for a period or periods aggregating more than three minutes in any consecutive 60-minute period in accordance with IDAPA 58.01.01.625.

6.4 Permit Condition 2.6 establishes a PM emission limit from any stack from any of the buildings enclosing equipment affected by 40 CFR 60 Subpart OOO to no more than 0.022 grains per dry standard cubic foot in accordance with 40 CFR 60.672(a). This emission limits is more stringent than the emissions rates in the applicants analysis. Therefore, no additional emissions limits are necessary to assure compliance with the NAAQS.

6.5 Permit Condition 2.7 requires that there be no visible emissions from any of the buildings enclosing equipment affected by 40 CFR 60 Subpart OOO in accordance with 40 CFR 60.672(e)(1).

6.6 Permit Condition 2.8 limits the throughput of the facility to no more than 480 tons per day. This is the rate that the facility used to demonstrate that the facility is a minor source and is the rate used to demonstrate compliance with the applicable NAAQS.

6.7 Permit Condition 2.9 requires that the facility operate baghouses on the primary crushing building, secondary crushing building, course products building, and fine products building. The permittee is required to operate the baghouses in accordance with the operations and maintenance (O&M) manual. This condition is necessary to assure that the facility can meet the zero visible emissions requirement from buildings in Permit Condition 2.7, as well as the stack emissions limits in Permit Condition 6.4.

6.8 Permit Condition 2.10 requires the facility to develop an O&M manual for each of the baghouses used on the buildings.

6.9 Permit Condition 2.11 requires the facility to conduct performance tests on all applicable sources affected by 40 CFR 60 Subpart OOO. At the time this permit was processed the performance tests had not been reviewed. This permit requirement can be satisfied by tests conducted prior to permit issuance, if they demonstrate compliance with 40 CFR 60 Subpart OOO.

6.10 Permit Condition 2.12 requires the facility to monitor and record the amount of zeolite bagged once per day to demonstrate compliance with Permit Condition 2.8.

6.11 Permit Condition 2.13 requires the facility to monitor and record the pressure drop across each baghouse once every two weeks to assure that they are being operated in accordance with the manufacturer specifications.

6.12 Permit Condition 2.14 requires the facility to submit reports of any performance tests conducted to demonstrate compliance with 40 CFR 60 Subpart OOO to DEQ within 30 days of conducting the test. This condition also requires the facility to submit reports to EPA within the timelines specified in 40 CFR 60.676.

Generators

6.13 Permit Condition 3.3 limits the opacity from the generator stacks to no more than 20% for a period or periods aggregating more than three minutes in any consecutive 60-minute period in accordance with IDAPA 58.01.01.625. Emissions from the generators, while operating at maximum capacity, do not exceed any ambient air quality standards nor affect the major/minor source status of the facility. Therefore, no further permit conditions are needed for the generators.

Zeolite Dryer

6.14 Permit Condition 4.2 limits the hourly and annual PM_{10} emissions from the zeolite dryer baghouse. These limits were included to protect the NAAQS and to assure that the facility remains a minor source for PM_{10}.

6.15 Permit Condition 4.3 limits the opacity from the dryer stacks to no more than 20% for a period or periods aggregating more than three minutes in any consecutive 60 minute period in accordance with IDAPA 58.01.01.625.

6.16 Permit Condition 4.4 limits the mercury content in the zeolite ore that is routed to the dryer to no more than 50 parts per billion by weight. This assures that mercury emissions from the dryer are below the applicable screening emissions level in IDAPA 58.01.01.585.

6.17 Permit Condition 4.5 requires that the zeolite dryer be fueled by liquefied petroleum gas or natural gas only. This is fuel used in the emissions analysis to demonstrate that this is a minor facility and to demonstrate compliance with the applicable NAAQS.

6.18 Permit Condition 4.6 requires that the zeolite dryer utilize a baghouse to control particulate emissions whenever the dryer is operating as the facility indicated in their application. The permittee is required to operate the baghouse in accordance with the O&M manual.

6.19 Permit Condition 4.7 requires the facility to develop an O&M manual for the zeolite dryer baghouse.

6.20 Permit Condition 4.8 requires the facility to monitor and record the pressure drop across the zeolite dryer baghouse once every two weeks to assure that it is being operated in accordance with the manufacturer specifications.

6.21 Permit Condition 4.9 requires the permittee to conduct a test on the zeolite ore to determine the mercury concentration. The test is to be performed in accordance with a DEQ approved test method.

Mining Operations

6.22 Permit Condition 5.3 requires that visible fugitive emissions not be observed leaving the property boundary for a period or periods which exceed three minutes in any consecutive 60 minute period. This condition is used to determine if the facility is reasonably controlling their fugitive emissions.

6.23 Permit Condition 5.4 requires the facility to develop a fugitive dust plan that meets the following requirements:

1. A general description of the potential sources of fugitive dust from the facility.
2. Application of water from water trucks for control of dust in mining areas, haul roads and loadout areas. The Plan must establish criteria to determine when water must be applied. Water does not need to be applied when the surface is wet (i.e. during/following rainy conditions) or when reduced ambient temperatures may cause the water to freeze. The applicant may choose to use surface improvements to existing roads in lieu of water application where appropriate to control fugitive dust.
3. Application of suitable dust suppressant chemicals (e.g., magnesium chloride) to haul roads during the dry season when necessary to control fugitive dust. The Plan must establish criteria to determine when dust suppressant must be applied. The applicant may choose to use surface improvements to existing roads in lieu of water application where appropriate to control fugitive dust.
4. Develop a dust control strategy for the drill rigs. The Plan must establish criteria to determine when dust control is needed on the drilling equipment. Suitable dust control strategies for the drill rigs include water spray systems, dust suppressant chemicals, enclosures, mechanical control devices, or a DEQ approved alternative method.
5. Establish procedures to minimize material drop heights and dust formation during truck loading operations and when dumping material from front-end loaders.
6. Establish procedures to minimize dust formation during conveying operations. The Plan must establish a method to determine the appropriate drop heights for transfer points.
7. Training/orientation of employees about the Fugitive Dust Control Plan procedures.
8. The initial Fugitive Dust Control Plan shall be submitted to DEQ for review and approval no later than 60 days after the issuance date of this permit. After approval of the initial plan, the permittee may update the plan at any time by submitting the proposed changes to DEQ for review and approval. The updated plan shall not become effective until approved by DEQ. If DEQ deems that the change in the plan qualifies as permit to construct modification as defined in IDAPA 58.01.01.006, the procedures specified in IDAPA 58.01.01.200-228 shall be followed to make the change.
9. Establish daily monitoring and recordkeeping of those criteria established to determine when control strategies must be employed for haul roads and drill rigs.
10. When in operation, the permittee shall comply with the provisions in the approved Fugitive Dust Control Plan at all times. Whenever an operating parameter is outside the operating range specified by the plan, the permittee shall take corrective action as expeditiously as practicable to bring the operating parameter back within the operating range.
11. A copy of the Fugitive Dust Control Plan shall remain onsite at all times.

6.24 Permit Condition 5.5 requires the permittee to conduct monthly inspections of sources of fugitive dust sources to ensure that fugitive dust emissions are being reasonably controlled. The results of each inspection are to be recorded and maintained on site.

6.25 Permit Condition 5.6 requires the permittee to maintain records of the methods used to reasonably control fugitive dust emissions.

Mercury Content of Zeolite Ore

6.26 Permit Condition 6.1 limits the mercury content in the zeolite ore to no more than 50 parts per billion by weight. This value was determined by calculating the mercury concentration that would be required, assuming all mercury in the ore is released from the dryer stack, to exceed the screening emissions level for mercury in IDAPA 58.01.01.585.

6.27 Permit Condition 6.2 requires the permittee to perform a test on the zeolite ore to determine the mercury content within 90 days of permit issuance. The test must be performed in accordance with a DEQ approved test method.

7. FACILITY DRAFT

A draft permit was submitted to the facility for review on February 25, 2005. The facility commented on the fine products building. The facility installed a baghouse to control emissions from the fine products building. The modeling analysis was conducted assuming there was no baghouse control on the fine products building. Adding a baghouse will reduce the emissions from this source. Therefore, no further requirements were added to this permit. However, the performance testing requirements in Permit Condition 2.11 still apply to the new baghouse in accordance with 40 CFR 60 Subpart OOO.

8. PUBLIC COMMENT

This permit was submitted for public comment from May 18, 2005 to June 17, 2005. On June 16, 2005 the Idaho Conservation League submitted comments on the proposed permit. DEQ has prepared a response to public comment package. The public response package will be made available at DEQ's state office in Boise, the Pocatello regional office, and the Larsen-San Public Library in Preston.

9. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend BRZ be issued PTC No. P-040310 for the zeolite mine. This project does not involve PSD requirements.

DH/sd Permit No. P-040310

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Appendix A
Modeling Analysis

MEMORANDUM

DATE: December 29, 2004

TO: Dustin Holloway

THROUGH: Kevin Schilling, Stationary Source Modeling Coordinator

FROM: Almer Casile, Permitting Analyst

PROJECT NUMBER: P-040310

SUBJECT: Modeling Review for the Bear River Zeolite, Preston, Facility ID No. 777-00278

1.0 Summary

Atmospheric dispersion modeling of emissions was submitted in a permit to construct application to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02). This modeling analysis included 7 point and 17 volume sources. The modeling analysis addressed the criteria pollutants PM_{10}, NO_2, SO_X, and TAP formaldehyde.

The modeling protocol discussed adjusting the meteorological data by rotating the wind rose for the facility. Staff did not use meteorological data submitted by the facility. The modeling analysis was performed using in house meteorological data. Table 1 presents the key assumptions used in the modeling analysis submitted by the applicant.

Table 1. Key Assumptions Used In Modeling Analysis Submitted By The Applicant

Assumption	Explanation
Applicant varied emission rates with wind speeds using STAR option in ISCST3.	Transfer point emissions are a function of wind speed. STAR option provides more detailed approach of modeling emissions.

Based on the results of the analysis, DEQ has determined that the submitted modeling analysis demonstrates, to DEQ's satisfaction, that the facility will not cause or contribute to a violation of any ambient air quality standards.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits

This facility is located in Franklin County designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}). The applicable regulatory limits for this application are presented in Table 2.

Table 2. Applicable Regulatory Limits				
Pollutant	**Averaging Period**	**Significant Contribution Levels ($\mu g/m^3$)[a, b]**	**Regulatory Limit ($\mu g/m^3$)[c]**	**Modeled Value Used[d]**
PM_{10}[e]	Annual	1	50[f]	Maximum 1st highest
	24-hour	5	150[g]	Highest 6th highest[f]
SO_2	Annual	1	80[h]	Maximum 1st highest
	24-hour	5	365[h]	Highest 2nd highest
	3-hour	25	1,300[h]	Highest 2nd highest
NO_2	Annual	1	100[f]	Maximum 1st highest
Acetaldehyde	Annual	N/A	4.5E-01	Maximum 1st highest
Benzene	Annual	N/A	1.2E-01	Maximum 1st highest
Formaldehyde	Annual	N/A	7.7E-02	Maximum 1st highest
Polycyclic Organic Matter (POM)	Annual	N/A	3.0E-04	Maximum 1st highest

a. IDAPA 58.01.01.006.93
b. Micrograms per cubic meter
c. IDAPA 58.01.01.577 for criteria pollutants, IDAPA 58.01.01.585 for non-carcinogenic toxic air pollutants IDAPA 58.01.01.586 for carcinogenic toxic air pollutants.
d. The maximum 1st highest modeled value is always used for significant impact analysis and for all toxic air pollutants. Concentration at any modeled receptor.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
f. Never expected to be exceeded in any calendar year.
g. Never expected to be exceeded more than once in any calendar year.
h. Not to be exceeded more than once per year.
i. When using 5 years of representative meteorological data.

Impacts resulting from emissions of PM_{10}, SO_X, and NO_2 exceeded significant contribution levels, and required full impact analysis. Emissions of acetaldehyde, benzene, formaldehyde, and POM (PAH) exceeded the screening levels in IDAPA 58.01.01.586, and therefore required modeling for compliance with applicable AACC values.

2.2 Background Concentrations

The appropriate background concentrations for this modeling analysis are presented in Table 3.

Table 3. Background Concentrations.		
Pollutant	**Averaging Period**	**Background concentrations ($\mu g/m^3$)[a, b]**
PM_{10}	24-hour	76
	Annual	26
SO_2	3-hour	34
	24-hour	26
	Annual	8
NO_2	Annual	17

a. Micrograms per cubic meter.
b. As provided by DEQ to the facility at the time the protocol developed and reviewed.

3.0 Assessment of Submitted, Certified Modeling Analysis

This section documents the assessment of the application materials as submitted and certified by the applicant.

3.1 Modeling Methodology

Spidell and Associates conducted the modeling analysis. Table 4 presents the modeling assumptions and parameters used by the applicant. Table 4 also includes DEQ's review and determination of those assumptions and parameters.

Table 4. Modeling Parameters.

Parameter	What Facility Submitted	DEQ's Review/Determination
Modeling protocol	A modeling protocol was submitted for prior approval	The original protocol was followed.
Model Selection	ISCST3	This is appropriate and correct version was used.
Meteorological Data	DEQ 1987 through 1991 surface data for Pocatello, 1987 through 1991 upper air data for Boise	Appropriate
Model Options	Regulatory defaults used	Appropriate
Land Use	Rural land use	Appropriate
Complex Terrain	Complex terrain is included in the model	Appropriate
Building Downwash	Downwash was included	Appropriate
Receptor Network	25 m from ambient air boundary to 200 m 50 m from 200 m out to 600 m 100 m from 2000 m out to 1200 m 200 m from 1200 m out to 2000 m	This is sufficient to adequately address the maximum design concentration
Facility Layout	Plot Plan	The facility building layout used in the model was verified by using the scaled plot plan submitted by the applicant. Stack and the kiln exhausts locations were verified against information submitted by the facility.

3.2 Emission Rates

Table 5 provides the criteria pollutant and TAPs emission rates used in the submitted modeling files, respectively.

Table 5. Emission Rates For Criteria And Toxic Pollutants (lb/hr)								
Source		Pollutants						
Source Description	Source ID	PM_{10}	NO_x	SO_x	Formaldehyde	Benzene	Acetaldehyde	POM
250 kW Generator	250KWGEN	7.27E-01	10.35	0.68	2.77E-03	2.19E-03	1.80E-03	8.05E-06
150 kW Generator	150KWGEN	4.36E-01	6.21	0.41	1.66E-03	1.31E-03	1.08E-03	4.83E-06
113 kW Generator	113KWGEN	3.29E-01	4.68	0.31	1.25E-03	9.90E-04	8.14E-04	3.64E-06
Cyclone	CYC	2.64						
Baghouse #1	BGH1	8.12E-01	0.15	2.19E-04	7.35E-05	1.18E-08		1.76E-09
Baghouse #2	BGH2	1.06						
Baghouse #3	BGH3	1.85						
Primary Jaw Crusher	JCR1	8.00E-02						
Apron Feeder Feed	TP1	6.06E-01						
Primary Jaw Feed	TP2	6.06E-01						
Trans. To Primary Screen Feed Belt	TP3	6.06E-01						
Trans. To 50/100 Ton Bin Feed Belt	TP7	2.02E-01						
50 Ton Bin Feed	TP8	2.02E-01						
Minus 1" 100 Ton Bin Feed	TP9	2.02E-01						
Trans. To 20 Ton Bin Feed Belt	TP19	2.02E-02						
20 Ton Bin Feed	TP20	2.02E-02						
Bucket Elevator	TP21	2.02E-02						
Minus 100 100 Ton Bin Feed	TP30	2.02E-02						
14X40 100 Ton Bin Feed	TP31	2.02E-02						
Minus 100 Bulk Loadout	TP32	2.02E-02						
14X40 Bulk Loadout	TP33	2.02E-02						
Coarse Product Building	BLDG2	1.65E-01						
Secondary Crushing/ Screening Building	BLDG3	2.92E-01						
Fine Products Building	BLDG4	5.01E-01						

3.3 Emission Release Parameters

The emission release parameters used in the modeling analysis submitted by the applicant are presented in Table 6a and 6b.

Table 6a. Point Source Emission Release Parameters					
Source	Stack Exhaust Type	Stack Height (ft)	Temp. (°F)	Exit Velocity (ft/s)	Stack Diameter (ft)
250KWGEN	Vertical	9	971.01	324.59	0.375
150KWGEN	Vertical	9	1035.00	243.99	0.333
113KWGEN	Vertical	8.5	1053.00	198.11	0.323
CYC	Rain Cap	23	70.00	3.28E-03	2.000
BGH1	Vertical	5	160.00	61.16	0.833
BGH2	Vertical	20	70.00	74.27	1.000

BGH3	Horizontal	22.5	70.00	3.28E-03	1.030

a. As per *Air Quality Modeling Guideline (rev. 12/31/02)*, stack's with raincaps shall have exit velocities set to 0.001 m/s. A sensitivity analysis was performed, therefore, with an exit velocity of 0.001 for each ABLINE1 and ABLINE2 stack.

Table 6b. Volume Source Emission Release Parameters

Source	Easting (X) (m)	Northing (Y) (m)	Base Elevation (ft)	Release Height (ft)	Horizontal Dimension σ_{yo} (ft)[a]	Horizontal Dimension σ_{xo} (ft)[b]
JCR1	6037.5	6025.6	5130	6	0.82	5.58
TP1	6037.5	6028.6	5135	15	0.92	0.46
TP2	6037.5	6026.2	5135	12	0.69	0.23
TP3	6037.5	6016	5125	8	0.69	0.23
TP7	6038.8	5992.5	5115	10	0.46	0.23
TP8	6043.6	5974.9	5115	27	0.46	12.57
TP9	6048.3	5957.2	5110	40	0.46	18.60
TP19	6040.9	5970.2	5115	6	0.46	0.23
TP20	6036.6	5960.1	5110	12	0.46	5.58
TP21	6039.6	5960.7	5110	4	0.46	0.23
TP30	6027.5	5910.8	5100	41	0.23	19.06
TP31	6051.5	5911	5100	40	0.46	18.60
TP32	6027.5	5905.6	5100	12	0.13	0.46
TP33	6051.5	5906.1	5100	12	0.13	0.46
BLDG2	6026.6	5945.4	5105	10	9.78	9.32
BLDG3	6047.4	5946.9	5105	10	5.12	9.32
BLDG4	6040.9	5922.1	5100	10	10.47	9.32

a. Calculated using the equation: σ_{yo} = (building height) ÷ 4.3
b. Calculated using the equation: σ_{xo} = (building height) ÷ 2.15

3.4 Results

This section present the results based on the information submitted as certified by the applicant.

3.4.1 Full Impact Analysis Results

Facility-wide emissions were modeled. The results are included in the following table.

Table 7. Facility Concentrations For Criteria Pollutants For Full Impact Analysis

Pollutant	Averaging Period	Facility Ambient Concentration (µg/m³)	Total Ambient concentration (µg/m³)	Percent of NAAQS	Receptor Location	
					East (m)	North (m)
PM_{10}	24-hour	41.11	117.1	78	6450.00	6225.00
	Annual	12.18	38.18	76	6450.00	6200.00
NO_2	Annual	16.23	33.23	33	6450.00	6200.00
SO_X	3-hour	17.74	59.60	4	5400.00	5875.00
	24-hour	6.95	32.95	9	5475.00	5700.00
	Annual	1.06	9.06	11	6450.00	6200.00

3.4.2 *Toxic Air Pollutants Results*

Facility-wide emissions of TAPs were modeled. Results are conservative because total emissions of TAPs (which includes the emission increase associated with the proposed permitting action) were modeled. The results are in the following table.

Table 8. TOXIC AIR POLLUTANTS ANALYSIS RESULTS

Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)	Regulatory Limit (ug/m^3)	Percent of Limit
Carcinogens				
Acetaldehyde	Annual	2.80E-03	4.5E-01	0.6
Benzene	Annual	3.40E-03	1.2E-01	3
Formaldehyde	Annual	4.37E-03	7.7E-02	6
POM	Annual	0.0001	3.0E-04	33

3.4.1 *Sensitivity Analysis*

Discussions with the facility revealed that the stack gas temperatures and exit velocities provided in the modeled were measured not at the exit of the stack, but at the manifolds of the generators. A sensitivity analysis was performed to account for the cooling of the exhaust gas as it travels away from the manifold to the stack exit point. DEQ determined that a reduction in temperature and velocity by 200 ° and 10%, respectively, would be conservative representation of conditions of stack exit conditions. Facility-wide emissions of PM_{10} were then modeled with the new generator data. (PM_{10} was the only pollutant within 25% of the NAAQS, and was considered the pollutant with the highest risk of exceeding NAAQS for PM_{10}). The results are included in the following table.

Table 7. Facility Concentrations For Criteria Pollutants For Full Impact Analysis

Pollutant	Averaging Period	Facility Ambient Concentration ($\mu g/m^3$)	Total Ambient concentration ($\mu g/m^3$)	Percent of NAAQS	Receptor Location	
					East (m)	North (m)
PM_{10}	24-hour	41.11	117.1	78	6450.00	6225.00
	Annual	12.18	38.18	76	6450.00	6200.00

Appendix B
AIRS Information

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Facility Name: Bear River Zeolite Co.
Facility Location: Preston, Idaho
AIRS Number: 041-00010

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B							U
NO_x	B							U
CO	B							U
PM_{10}	SM						SM	U
PT (Particulate)	SM							
VOC	B							U
THAP (Total HAPs)	B							
			APPLICABLE SUBPART					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

Air Quality Permitting
Response to Public Comments

August 26, 2005

Permit To Construct Permit No. P-040310

Bear River Zeolite Co., Preston

Facility ID No. 041-00010

Prepared by:

Dustin Holloway, Permit Writer
Dan Pitman, Permit Coordinator
AIR QUALITY DIVISION

FINAL

Acronyms, Units, and Chemical Nomenclatures

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
NO_X	nitrogen oxides
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SO_2	sulfur dioxide
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. BACKGROUND

As required by IDAPA 58.01.01.209.01.c of the Rules for the Control of Air Pollution in Idaho (Rules), the Idaho Department of Environmental Quality (DEQ) provided proposed Permit to Construct (PTC) No. P-040310 for Bear River Zeolite Co., located in Preston for public notice and comment. Public comment packages, which included the application materials, the proposed permit, and the associated air quality statement of basis, were made available for public review at DEQ's Pocatello Regional Office, Larsen-San Public Library, and DEQ's state office in Boise. A copy of the proposed PTC No. P-040310 and the statement of basis were also posted on DEQ's Web site. The public comment period for the PTC was provided from May 18 through June 17, 2005.

The following is a summary list of all documents received from the public containing comments on the above referenced permit action.

1. Idaho Conservation League Letter to DEQ, dated June 16, 2005

2. PUBLIC COMMENTS AND RESPONSES

This section provides the air quality related comments submitted on the proposed action and DEQ's responses to those comments. Based on the application materials and the Rules, DEQ has responded only to those comments that directly relate to the air quality aspects of the permit. The following is a summary of the comments and DEQ's response.

1. Comments from the Idaho Conservation League

Comment No. 1

It is unclear why the primary crusher is allowed to operate with no pollution control equipment.

DEQ Response to Comment No. 1

The primary crusher emissions were estimated with AP-42 emissions factors and included in the facility-wide dispersion modeling analysis. The results of the modeling analysis demonstrate that the emissions from the facility, including the uncontrolled primary crusher and transfer points, will not cause or significantly contribute to a violation of the PM_{10} NAAQS. Therefore, no further controls or permit conditions are necessary.

Comment No. 2

It is unclear which baghouses are associated with which crushers and buildings in both the permit and statement of basis.

DEQ Response to Comment No. 2

DEQ clarified the emissions inventory to show which baghouse is associated with which building. The equipment in each building is described in Table 5.1 of this memo and Table 1.1 in the permit.

Comment No. 3

The PTC should reflect the addition of a baghouse to the fine products building.

DEQ Response to Comment No. 3

The permit was changed to require a baghouse on the fine products building.

Comment No. 4

DEQ should add gr/dscf = grains per dry standard cubic foot to the acronym list.

DEQ Response to Comment No. 4

DEQ added grains per dry standard cubic foot (gr/dscf) to the acronym list.

Comment No. 5

DEQ needs to include language in the permit that requires the operator to operate and maintain the rock-crusher baghouses in a manner that is consistent with the manufacturers recommendations.

DEQ Response to Comment No. 5

DEQ clarified that the baghouses are to be operated in accordance with their respective O&M manuals. The manuals are to contain manufacturer specifications and minimum pressure drop ranges for each baghouse. DEQ added a requirement that the facility monitor and record the pressure drop across each baghouse once every two weeks when the baghouses are operating.

Comment No. 6

Permit Condition 2.10 references the zeolite dryer baghouse. The permit condition should reference the crushers.

DEQ Response to Comment No. 6

The typographic error in Permit Condition 2.10 was corrected. The permit condition now references the crushers and associated buildings rather than the zeolite dryer.

Comment No. 7

DEQ needs to include language in the permit that requires the operator to operate and maintain the zeolite dryer baghouse in a manner that is consistent with the manufacturers recommendations.

DEQ Response to Comment No. 7

The zeolite baghouse O&M manual is required to contain the manufacturer operating and maintenance specifications and the permittee is required to operate the baghouse in accordance with the O&M manual. DEQ added a requirement that the facility monitor and record the pressure drop across the zeolite dryer baghouse once every two weeks when the baghouse is operating.

Comment No. 8

The emissions inventory fails to note if the zeolite dryer will have mercury emissions.

DEQ Response to Comment No. 8

Bear River Zeolite contacted the U.S. Geological Survey and inquired about the mercury content of Bear River zeolite. George Desborough, PhD replied and stated that there was no detectable mercury, at the 10 parts per billion level, in Bear River zeolite. DEQ ran a sensitivity analysis to determine the quantity of mercury that would have to be present in the zeolite, assuming all of it was volatilized, to exceed the screening emissions level (EL) for mercury in IDAPA 58.01.01.585. In order to exceed the EL, the mercury content of the zeolite, assuming all of it was released, would have to be 50 parts per billion. DEQ has established a 50 parts per billion mercury content limit in the zeolite or and is requiring the applicant to conduct a test on the zeolite ore to assure compliance.

Comment No. 9

DEQ needs to ensure that all processes and units have numeric limits in order to substantiate that this facility will be synthetic minor.

DEQ Response to Comment No. 9

This facility is designated as a synthetic minor facility for PM_{10} because the uncontrolled emissions could exceed major source thresholds. The applicant estimated the baghouse emissions by assuming that the exhaust would contain 0.2 gr/dscf of particulate matter. This resulted in an annual emission rate of approximately 30 tons per year. The new source performance standards in 40 CFR 60 Subpart OOO require that stacks from control devices have no more than 0.022 gr/dscf (Permit Condition 2.6) of particulate matter. This corresponds to an inherent emission limit of less than 3 tons per year. The permittee is required to conduct performances tests in accordance with the methods outlined in 40 CFR 60 Subpart OOO (Permit Condition 2.11) to verify that the baghouses can meet these standards. Therefore, no further emission limits are necessary to assure that this facility will remain synthetic minor.

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